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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,495	09/24/2001	Hiroyuki Amishiro	50090-338	5812

7590 12/03/2003

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EXAMINER	
HOGANS, DAVID L	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/960,495	AMISHIRO ET AL.	
	Examiner	Art Unit	
	David L. Hogans	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 21* is/are pending in the application.

4a) Of the above claim(s) *14-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9,11 and 13* is/are rejected.

7)☒ Claim(s) *6-8,10,12 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This Office Action is in response to the Request for Reconsideration filed on July 8, 2003.

Status of Claims

Claims 1-13 and 21 are pending. Claims 14-20 are withdrawn.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-3, 11 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 recites the limitations: "a plurality of resistor elements formed over a insulating film" and "wherein said active regions partition said insulating film between adjacent resistor elements." Figure 4, the only Figure showing plural resistive elements (4) formed over an insulating film (2), fails to show active regions (3) partitioning the area between adjacent resistive elements. The Examiner notes that all sectional views (Figures 1B, 2B, and 5B) show only a single resistor over each discrete insulating film.

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-13 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner is uncertain as to if the plurality of resistor elements are formed on a single insulating film (i.e. – does each discrete insulating film contain two or more resistive elements) or if some other condition exists. For Example, Figures 1B, 2B, and 5B show a single resistor formed over a single insulating film. The Examiner notes that no Figure conclusively demonstrates a plurality of resistive elements formed over a single insulating film. Although, Figure 4 may arguably demonstrate a plurality of resistive elements formed over a single insulating film, it is only a plan view, and such determination cannot be conclusive, and furthermore, Figure 4 does not meet the additional requirement of Claim 1 that the "active regions partition said insulating film between adjacent resistor elements." Hence the Examiner's confusion in determining the scope of Claim 1.

3. Claims 1-13 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In Claim 1 line 2, the term "predetermined" is indefinite. *Seagram & Sons Inc. v. Mazall*, 180 F.2d 26, 84 USPQ 180 (CA DC 1950); See also *In re Russo*, 106 USPQ 108 (CCPA 1955) The Examiner also notes that Claims 3-5 and 13 also contain the language "predetermined".

4. Claims 1-3, 9-11, 13 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention. Merriam-Webster's Collegiate Dictionary (2001), Tenth Edition, defines "partition" as "something that divides". The Examiner is uncertain how the active regions partition the insulating film when Figures 1B, 2B, and 5B show the insulating films as discrete/finite separate elements even before the formation of the active regions. Therefore, how do the active regions partition what is already separated?

5. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner is uncertain as to how the width of the insulating film defines an amount of shift in resistance value of the resistor elements. Generally, the Examiner is uncertain as to what an "amount of shift in resistance value" is?

Claim Objections

6. Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 9 does not further limit Claim 1 because Claim 1 already requires a plurality of the resistor elements between adjacent active regions.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by 6,121,643 to Gardner et al.

In reference to Claims 1 and 3, Gardner et al. teaches:

- a plurality of resistor elements (303-305) formed on an insulating film (302) in a predetermined region on a substrate (301) (See Figures 3 and 4 and columns 4-6 lines 03-45)
- active regions (307-310) proximate to each of said resistor elements (303-305), wherein said active regions partition said insulating film (302) between adjacent resistors (See Figures 3 and 4 and columns 4-6 lines 03-45)
- the insulating film (302) under the resistor elements is set to a predetermined width by the active regions (307-310) (See Figures 3 and 4 and columns 4-6 lines 03-45)

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 5 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2002/0033519 to Babcock et al.

In reference to Claims 5 and 9, Babcock et al. teaches:

- active regions (80) proximate to each of the resistor elements (60 and 70) (See paragraphs 0017-0021 and Figures 2A-2D)
- the regions including the active regions are furnished with dummy gate electrodes constituting the same layer as that of said resistor elements (See paragraphs 0017-0021 and Figures 2A-2D)

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US2002/0033519 to Babcock et al. in view of Silicon Processing for the VLSI Era (2000), Volume 1, to Wolf et al.

Claim 1

Babcock et al., in paragraphs 0017-0021 and Figures 2A-2D, teaches a plurality of resistor elements (60 and 70) on an insulating film (20) in predetermined regions and active regions (80) adjacent to the resistor elements (60 and 70) that partition the

insulating film (20). Furthermore, Babcock et al. teaches plural isolation structures, CMOS circuits and transistor gate structures.

Babcock et al. fails to explicitly teach wherein the active regions partition the insulating film between adjacent resistor elements.

However, Wolf et al., on page 301, teaches that MOS devices (i.e. – active regions) are isolated from each other by shallow trench isolation structures.

It would have been obvious to one of ordinary skill in the art to modify Babcock et al. by incorporating active regions on either side of an insulating region, as taught by Wolf et al., to isolate adjacent active regions, thereby preventing coupling.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to place another active region/resistor element combination adjacent the previous active region/resistor element combination to create an array of programmable structures, since it has been held that mere duplication of the essential working parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669 (CCPA 1960)

Claim 2

Incorporating all arguments of Claim 1 and noting that Babcock et al., in paragraphs 0017-0021 and Figures 2A-2D, teaches an insulating film (20) formed by STI. Furthermore, the Examiner notes that the patentability of a product does not depend on its method of production. Therefore, the limitation that the insulating film is formed by shallow trench isolation carries no patentable weight.

"Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Claim 3

Incorporating all arguments of Claim 1 and noting that Babcock et al., in paragraphs 0017-0021 and Figures 2A-2D, teaches wherein said insulating film (20) is set to a predetermined width by said active regions (80).

Claim 11

Incorporating all arguments of Claim 1 and noting that Babcock et al., in paragraphs 0017-0021 and Figures 2A-2D, teaches wherein said active regions (80) extend close to lengthwise ends of said resistor elements (60 and 70).

Claim 13

Incorporating all arguments of Claim 1 and noting that Babcock et al., in paragraphs 0017-0021 and Figures 2A-2D, teaches wherein said resistor elements (60 and 70) are formed by a layer constituting gate electrodes of MOS transistors (80) outside said predetermined regions.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US2002/0033519 to Babcock et al. in view of Microchip Fabrication (2000) to Van Zant.

Babcock et al., in paragraphs 0017-0021 and Figures 2A-2D, teaches a plurality of resistor elements (60 and 70) on an insulating film (20) in predetermined regions and

active regions (80) adjacent to the resistor elements (60 and 70) that partition the insulating film (20).

Babcock et al. fails to explicitly teach wherein said predetermined width is defined by an amount of shift in resistance value of said resistor elements.

However, Van Zant, on pages 30-31, teaches that a resistors resistance varies inversely with the width of the resistor. Therefore, the Examiner deems this limitation (i.e. - wherein said predetermined width is defined by an amount of shift in resistance value of said resistor elements) as obvious to one having ordinary skill in the art.

It would have been obvious to one having ordinary skill in the art to modify Babcock et al. by incorporating the principle where a resistors resistance varies inversely with the width of the resistor, as taught by Van Zant, because this scientific principle is well known within the art.

4. Claims 1-3, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0084886 to Wu. in view of US 2002/0033519 to Babcock et al.

Claim 1

Wu, in Figures 2A-2G and paragraphs 0025-0034, teaches a resistor element (214) on an insulating film (202) in predetermined regions and active regions (220)

adjacent to the resistor element that partition the insulating film. Furthermore, Wu teaches that the isolating region (202) separates the active regions. (See page 2 paragraph 0025)

Wu fails to explicitly teach a plurality of resistor elements formed on an insulating film.

However, Babcock et al., in paragraphs 0017-0021 and Figures 2A-2D, teaches a plurality of resistor elements (60 and 70) formed on an insulating film (20).

It would have been obvious to one of ordinary skill in the art to modify Wu by incorporating a plurality of resistor elements formed on an insulating film, as taught by Babcock et al., to provide heating elements adjacent to a resistor or fuse that can greatly reduce the current needed to trim the resistor or program the fuse.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to place another active region/resistor element combination adjacent the previous active region/resistor element combination to create a high resistance transistor gate array, since it has been held that mere duplication of the essential working parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669 (CCPA 1960)

Claim 2

Incorporating all arguments of Claim 1 and noting that Wu, in Figures 2A-2G and paragraphs 0025-0034 teaches an insulating film (202) formed by STI. The Examiner notes that the patentability of a product does not depend on its method of production. Therefore, the limitation that the insulating film is formed by shallow trench isolation carries no patentable weight.

"Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not.

Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Claim 3

Incorporating all arguments of Claim 1 and noting that Wu, in Figures 2A-2G and paragraphs 0025-0034, teaches wherein said insulating film (202) is set to a predetermined width by said active regions (220).

Claim 11

Incorporating all arguments of Claim 1 and noting that Wu, in Figures 2A-2G and paragraphs 0025-0034, teaches wherein said active regions (220) extend close to lengthwise ends of said resistor elements (214).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0084886 to Wu in view of US 2002/0033519 to Babcock et al. in view of Microchip Fabrication (2000) to Van Zant.

Incorporating all arguments of Claim 1 and noting that Wu and Babcock et al. fail to explicitly teach wherein said predetermined width is defined by an amount of shift in resistance value of said resistor elements.

However, Van Zant, on pages 30-31, teaches that a resistors resistance varies inversely with the width of the resistor. Therefore, the Examiner deems this limitation (i.e. - wherein said predetermined width is defined by an amount of shift in resistance value of said resistor elements) as obvious to one having ordinary skill in the art.

It would have been obvious to one having ordinary skill in the art to modify Wu and Babcock et al. by incorporating the principle where a resistors resistance varies inversely with the width of the resistor, as taught by Van Zant, because this scientific principle is well known within the art.

Response to Arguments

6. Applicant's arguments filed July 8, 2003, have been fully considered but they are not persuasive.

7. The Applicant proffers the following arguments.

Claim 1

First, the Applicant argues that the Examiner has failed to establish that the factual situation of In re Harza is sufficiently similar to the present application. The Examiner notes that MPEP § 2144 does not explicitly place the burden of proof upon the Examiner to prove that the facts in a prior legal decision are sufficiently similar. Further, the Examiner notes that Babcock et al. possesses all of the limitations of the Applicant's claimed invention and that mere replication of the elements would be within the ordinary skill of one within the art to create a programmable gate array.

Second, the Applicant argues that the Examiner has failed to establish that one of such active regions would necessarily partition the insulating film between adjacent resistor elements. The Examiner maintains that active region (80), of Babcock et al., would partition the insulating film (20) when set side by side.

Third, the Applicant argues that feature (80) is not an active region. The Examiner notes that an "active region" merely denotes a region wherein gain or energy conversion takes place. Additionally, the Examiner notes that the source/drain regions of transistor (80), in Babcock et al., were not demarcated. The text of Babcock et al. clearly designates the feature (80) as a transistor (i.e. – a device that contains source/drain regions), therefore, the Examiner persists in labeling the active areas as (80).

Claim 2

Fourth, the Applicant argues that product-by-process limitations must be construed. The Examiner merely notes the Babcock et al. teaches forming the insulating layer by shallow trench isolation.

Claim 4

Fifth, the Applicant argues that they are unsure as to the relevance of the Van Zant teaching. Initially, the Examiner notes that the term "predetermined" is indefinite, thereby, rendering Claim 4 indefinite. *Seagram & Sons Inc. v. Mazall*, 180 F.2d 26, 84 USPQ 180 (CA DC 1950); See also *In re Russo*, 106 USPQ 108 (CCPA 1955) Additionally, the Examiner is uncertain as to what an amount of shift in resistance value is? Finally, the Examiner notes that the width of the insulating film is determined by the

resistor element and the cross sectional area (width x length) of a resistor is related to its resistance value. Therefore, a shift in resistance value would be obtained if one made the cross sectional area increase or decrease by varying the width.

8. Applicant's arguments, see pages 6-7, filed July 8, 2003, with respect to the rejection(s)of claim(s) 1-3, 11 and 13 under 4,326,213 to Shirai, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of US 2002/0084886 to Wu.

Allowable Subject Matter

9. Claims 6-8, 10, 12 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter.

With regard to Claims 6-8, the prior art of record, in combination with the other claimed features, fails to teach wherein said dummy gate electrodes entirely cover the active regions, or wherein said active regions are covered with a plurality of dummy gate electrodes, or wherein a distance between each of said resistor elements and each of said dummy gate electrodes is held constant.

With regards to Claim 10, the prior art of record, in combination with the other claimed features, fails to explicitly teach wherein the minimum space between any

adjacent two of said plurality of said resistor elements is formed by a conductive film constituting the same layer as the resistor elements.

With regards to Claim 12, the prior art of record, in combination with the other claimed features, fails to explicitly teach wherein the resistor elements are surrounded by the dummy gate electrodes.

With regard to Claim 21, the prior art of record, in combination with the other claimed features, fails to explicitly teach wherein the distance between adjacent plurality of resistor elements is approximately equal to the distance between any adjacent pair of resistor elements and the dummy gate electrodes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Hogans whose telephone number is (703) 305-3361 or (571) 272-1691, after February 9, 2004. The examiner can normally be reached on M-F (7:30-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (703) 308-4940. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

dh

ERIK J. KIELIN
PRIMARY EXAMINER